

Remarks

Claims 1-7 are pending. No claims are amended or canceled. New claims 8-13 are submitted for consideration. New claims 8-13 depend from claim 1.

Support for new claims 8-13 is as follows:

Claim 8: page 11, line 23 to page 12, line 13; page 13, line 2.

Claim 9: page 11, lines 9-11 and 19-22; FIGS. 1, 2(a), and 3.

Claim 10: compare FIGS. 4(a)-4(b) and 5 (in which the displacement portion 13 must fit within a narrow waveguide 196 that would in some instances be too narrow to accommodate two legs 52) with FIGS. 1-2 (in which the displacement portion 13, which in the depicted embodiment does not fit within a narrow waveguide 196, is relatively wide and can be supported by two legs 52).

Claim 11: page 11, lines 12-13; FIGS. 2(a) and 3.

Claim 12: page 12, lines 4-7; FIG. 3.

Claim 13: page 11, lines 14-18; FIG. 3.

The Examiner is reminded of the corrective actions requested on page 4 of the previous Amendment (of April 6, 2006). These corrections pertain to the fact that the Applicant, not the Examiner, originally cited Park '390, Suzuki '301, Ishizuya '932, and Takeda '387. It is appropriate that these references be noted, on any patent arising from this application, as references cited by the Applicant, not by the Examiner. **Confirmation is requested that these corrections have been made in the record in a sufficiently clear manner to avoid errors in this regard at time of printing the patent.**

Claims 1-4 stand rejected for alleged anticipation (35 U.S.C. §102(b)) by Park. This rejection is traversed.

As already explained in the record, claim 1 is directed to a three-dimensional structure element that comprises a substrate and three-dimensional structures arranged in a predetermined effective area on the substrate. The three-dimensional structures have space portions, which are formed by removing a sacrificial layer, between the three-dimensional structures and the substrate. On the substrate, a dummy area is arranged to surround the effective area. The dummy area includes dummy structures arranged in it. The dummy structures have space portions, which are formed by removing a sacrificial layer, between the dummy structures and the substrate.

First, the Examiner has already admitted in the record (see page 2 of the previous Office action) that Park '390 does not disclose a dummy area surrounding an effective area, does not disclose dummy structures arranged in the dummy area, and does not disclose dummy structures having space portions, located between the dummy structures and the substrate and formed by removing a sacrificial layer. It is not understood (and the Office action contains no explanation of) why or how the Examiner has changed his mind on this point.

Second, regarding the claimed dummy area and dummy structures, Applicant quotes the following from the specification:

As shown in Fig. 1, plural dummy structures 33 are arranged in the dummy area 21 on the substrate 11. These dummy structures 33 are arranged to prevent the dummy area 21 from being heated to high temperature in a process of removing a sacrificial layer in a manufacturing method to be described later. The dummy structures 33 are formed in the same shape as the displacement portions 13 of the three-dimensional structures 1 and have legs 52 that are the same as the legs 52 of the displacement portions 13. In addition, the dummy structures 33 are arranged vertically and horizontally at the same pitch as the three-dimensional structures 1 in the effective area 20. However, the reflecting mirrors 2 and the wiring pattern layers are not formed in the dummy structures 33 in order to simplify a configuration thereof.

Specification, page 12, line 14 to page 13, line 2. In other words, the dummy structures of the three-dimensional structure element recited in claims 1-4 are arranged in an area (dummy area) where a large temperature difference occurs (outside the effective area) at least during manufacturing. The features of the dummy structures are different from the features of the three-dimensional structures in the effective area. A "dummy" object is an object that simulates or replaces something but lacks the function of the something. *American Heritage Dictionary*. Accordingly, the claimed dummy structures in the dummy area are formed in the same shape and have the same legs as the three-dimensional structures in the effective area but do not have other features (*e.g.*, reflecting mirrors and wiring pattern layers); thus, the dummy structures lack the function of the three-dimensional structures in the effective area and hence are not the same as the three-dimensional structures in the effective area.

The Examiner appears to believe that the "dummy structures" recited in claim 1 are exactly like the three-dimensional structures in the effective area. In view of the foregoing, this apparent belief is incorrect and unfounded.

Park neither discloses nor suggests dummy structures in a dummy area of any kind, much less a dummy area surrounding an effective area. In fact, Park does not teach or suggest a dummy area at all or what such an area would be or could be used for. The Examiner refers to FIG. 2L of Park and contends that the "left 301" is a claimed dummy structure in a dummy area and the "right 301" is a claimed three-dimensional structure in an effective area. This contention is incorrect and groundless. The left 301 is exactly the same as and has all the features of the right 301. There is no indication or suggestion whatsoever in Park that the left 301 and right 301 are different in any way from each other. There is also no indication or suggestion whatsoever that the right 301 is in an effective area and the left 301 is not. FIG. 2L of Park simply shows two items that are identical in every way; nothing more, nothing less. There is also no basis whatsoever in either FIG. 2L or its associated text in Park that would lead to any sensible conclusion that one of the items 301 is a dummy of anything, much less of the other item 301. Therefore, and for other reasons of record (including the Examiner's own admissions), claim 1 and its dependents (including new claims 8-13) are not anticipated by or obvious from Park.

Each of claims 2-4 and 8-13 adds at least one respective feature to the combination of features recited in claim 1. Hence, each of these dependent claims is properly allowable over Park for all the reasons discussed above (and elsewhere in the record) regarding claim 1. Each of these dependent claims is also properly allowable because each of the respective combinations is patentable in its own right over Park.

With respect to each of claims 2, 3, and 4, the Office action contends that "Park discloses a portion of the dummy structures (left 301, For example Fig. 2L)" Based on the foregoing this contention is incorrect. There is nothing in Park to indicate or suggest that the left 301 is different in any way to the right 301 or that either the left or right 301 is a "dummy" of anything.

Claim 7 stands rejected for alleged obviousness from Park et al. in view of Yagi. This rejection is traversed.

In the previous Response, Applicant noted that Yagi does not appear on the Examiner's Form 892, and does not appear on Applicant's Form 1449. **As now requested for the second time, clarification and correction are requested.**

As already explained in the record, claim 7 is directed to a method of manufacturing a three-dimensional structure element. One step involves forming a sacrificial layer and predetermined thin film three-dimensional structures in a predetermined effective area on a substrate and forming a sacrificial layer and predetermined thin film dummy structures in a dummy area surrounding the effective area. Another step involves removing the sacrificial layers in the effective area and the dummy area with a dry process.

In view of the foregoing discussion concerning the shortcomings of Park, the contentions regarding Park in the paragraph at the top of page 4 of the Office action are incorrect and groundless.

Applicant agrees with the admission in the Office action that "Park did not disclose [sic] the sacrificial layers are removed [sic] by dry etch process." Yagi is cited in the Office action for its alleged disclosure that "the sacrificial layer can be removed by dry etching [sic] using the technology of reactive ion etching (RIE) and any possible sticking phenomenon that may appear between the microstructure and the substrate." For the sake of argument, even if the Examiner's contention regarding Yagi were true (and Applicant makes no such admission), Applicant queries, "So what?" The deficiencies of Park discussed herein are still not satisfied by Yagi.

Applicant also points out again (see previous Response) that there is no perceptible disclosure or suggestion in Yagi of forming dummy structures has claimed, whether formed by a sacrificial layer or not. In addition, Yagi is directed to forming one actuator. Consequently, in contrast to one of Applicant's motivations to derive claim 7, in Yagi the distribution of temperature encountered during dry etching is of no consequence, and hence is neither mentioned nor suggested. Whereas Park discusses multiple actuators, Park is silent on dry etching, as admitted in the Office action. Park also does not disclose or suggest anything concerning the distribution of temperature encountered during dry etching and does not disclose or suggest anything about how to solve such a problem. Hence, the skilled person armed with Park would have no motivation to consult Yagi.

Therefore, claim 7 is properly allowable over any combination of Park and Yagi.

Claims 5-6 stand rejected for alleged obviousness from Park in view of Wu. This rejection is traversed.

As already explained in the record, claim 5 is directed to an optical switch that comprises an optical waveguide substrate and a three-dimensional element substrate including displaceable reflecting mirrors. The three-dimensional structure element substrate has a substrate and three-dimensional structures arranged in a predetermined effective area on the substrate. The three-dimensional structures include the reflecting mirrors and displacement portions on which the reflecting mirrors are placed, and the displacement portions have space portions, which are formed by removing a sacrificial layer, between the displacement portions and the substrate. On the substrate, a dummy area is provided to surround the effective area. Dummy structures are arranged in the dummy area, and the dummy structures have space portions, which are formed by removing a sacrificial layer, between the dummy structures and the substrate.

As already explained in the record, claim 6 is directed to a micro device that comprises displaceable thin film three-dimensional structures. The micro device has a substrate and the thin film three-dimensional structures are arranged in a predetermined effective area on the substrate. The thin film three-dimensional structures have space portions, formed by removing a sacrificial layer, between the thin film three-dimensional structures and the substrate. On the substrate, a dummy area is arranged to surround the effective area. Dummy structures made of a thin film are arranged in the dummy area. The dummy structures have space portions, formed by removing a sacrificial layer, between the dummy structures and the substrate.

As noted above, the record already contains the Examiner's admission that Park does not disclose a dummy area surrounding an effective area, does not disclose dummy structures arranged in the dummy area, and does not disclose dummy structures having space portions, located between the dummy structures and the substrate and formed by removing a sacrificial layer. Therefore, and for other reasons discussed above in the instant remarks, the respective combinations of features recited in claims 5 and 6 are not disclosed in or suggested by Park.

Applicant points out that the various contentions in the paragraph at the top of page 5 of the Office action, particularly the contentions regarding dummy structures and dummy regions, are incorrect and groundless. Similarly, the various contentions in the large paragraph on page 6 of the Office action, particularly the contentions regarding dummy structures and dummy regions, are incorrect and groundless. Also, certain recitations in claims 5 and 6, particularly

with respect to dummy structures and dummy regions, are similar to corresponding recitations in claim 1. Hence, just as claim 1 is properly allowable, so are claims 5 and 6.

Applicant agrees with the admission on page 5 of the Office action that "Park did not disclose [sic] the three-dimensional structures include [sic] the reflecting mirrors and displacement portions on which the reflecting mirrors are placed, and the displacement portions have space portions, between the displacement portions and the substrate."

But, the Office action cites Wu for its alleged disclosure of these features. For the sake of argument, even if the Examiner's contention regarding Wu were true (and Applicant makes no such admission), Applicant queries, "So what?" The deficiencies of Park discussed herein are still not satisfied by Wu.

Therefore, claims 5-6 are allowable over any combination of Park and Wu.

Therefore, claims 1-13 are properly allowable over the references of record, and early action to such is requested.

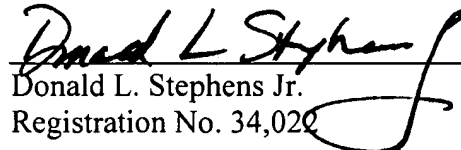
The Examiner is again reminded that Applicant is entitled to an interview at this stage of prosecution. If any issues remain after consideration and entry of this paper, the Examiner is requested to contact the undersigned to schedule a telephonic interview. If the Examiner does not contact the undersigned and issues a subsequent Office action, the undersigned rightfully will regard such non-contact as an acquiescence by the Examiner to grant an interview as a matter of right after the subsequent action, even if it is a final action.

Respectfully submitted,

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